STAT F611: Time Series, Spring 2011

MWF 1:00–2:00 Gruening 309

Instructor: Zepu Zhang. 306A Chapman, zzhang6@alaska.edu, 474-7605.
Mail box: Chapman 101.

Office Hours: MWF 3:30–5:00; or by appointment.

Textbook: *Time Series Analysis With Applications in R*, by Jonathan D. Cryer and Kung-Sik Chan, 2nd ed, 2008, Springer. We plan to cover chapters 1–11 and possibly 13.

Full-text of this book is available online at www.springerlink.com (only if you access it on the UAF campus, I suppose).

Blackboard: A course Blackboard site has been set up. You may use it to access homework assignments and check your grades. Various other materials will be posted there as well either before or after the pertinent lecture. Lecture notes posted before the lecture may see light changes after the lecture.

Prerequisites: Stat 401 or an equivalent course is adequate preparation; a grade of B or better in the previous course is recommended. Caveat: If it has been a long time since you've had Stat 401 (or equivalent), you are strongly advised to take Stat 401 before taking Stat 611.

Goals and expected learning outcomes: Students completing this course will understand the basics of time series analysis, including, but not limited to, the following:

1. Carry out exploratory data analysis by plotting data appropriately, using R.
2. Understand, describe, manipulate the key time series models, including auto-regressive (AR), moving average (MA), ARMA, ARIMA, and SARIMA models.
3. Carry out estimation and forecasting in the time domain using R.
4. Know the basics of maximum likelihood estimation, where applicable to time series.

I intend this course to be roughly equally split between theory and applications. You will be expected to be able to analyze time series data using graphical and analytical tools that are built into the free software package, R.

Computing: For most of the data analysis in class and homework we will use the freeware statistics package `R`. Your textbook contains most of the `R` code you will need; the preface of the book points to additional resources including the `R` package `TSA` and the webpage http://www.stat.uiowa.edu/∼chan/TSA.htm. `R` can be downloaded from http://www.R-project.org; this site also has a link to an extensive pdf file of documentation.

Depending on the need, help on the use of `R` will be provided in lectures or lecture notes.

Homework:

There will be a homework assignment due on most Fridays. The assignment will posted on the preceding Friday or Saturday. See "schedule.pdf" for details.

Homework should be submitted in class or into the instructor's mail box no later than 4pm on the due date.

Homework should be typeset/word-processed or hand-written neatly. Turn in hard copies only. Remember to number the pages and use a stapler.

Late homework will not be accepted in general. Exceptions are made on a case-by-case basis by the instructor and typically are made only for documented health or university-sponsored activities.

Exams:

There will be one midterm exam. Format of the exam will be determined later. For example, it could be a take-home project.

The two-hour final exam will be comprehensive. It will be open-book, open-notes. You may use a calculator, but not a computer, in the final exam.

Grading policy:

In all homework and exams, messy presentation and incomplete/unclear writing, as determined by the instructor, may cost partial credit.

In all homework and exams, intermediate steps that show your understanding of the topic and procedure are as important as the final answer. Both the procedure and the final answer carry credit.

Your final grade will be calculated based on the following proportions:

Homework	35%
Midterm	30%
Final	35%

Grading scale: A (honor grade): 90–100; B (outstanding): 80–89.99; C (average): 70–79.99; D (below average): 60–69.99; F (failure): 0–59.99.

All homework assignments may not be worth the same number of points.

Ethics: Studying together, and getting study assistance from a tutor, is allowed and encouraged. Copying someone else's work and representing it as your own is plagiarism. Plagiarism and other forms of cheating in homework and exams may result in a 0 (zero) score for the homework/exam involved.

Please read "Student Code of Conduct" on pages 117–118 of the *Class Schedule*, and policies of the Department of Math and Stats at www.dms.uaf.edu/dms/Policies.html.

Disability Services: If you have a physical handicap or learning disability, please make me and the Office of Disabilities Services (474-5655) aware of the situation so that reasonable accommodations can be made.

Withdrawal: I may withdraw any student from class who (1) misses an exam without a valid reason OR (2) misses two homework assignments.

Some Important Dates:

Please read the inside cover of the "Class Schedule" for important dates regarding adding, dropping, withdrawing, etc.

Deadline for drops (no record): Friday, Feb 4.

Deadline for withdrawals ('W' grade): Friday, March 25

Final exam: 1:00–3:00, Wednesday, May 11, Gruening 309.